PLANTAE AUSTRO-AMERICANAE. — I

Novae notiones conjunctionesque generis *Herrania*

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It has been found advisable to publish the following new combinations and concepts as a result of revisionary studies in the sterculiaceous genus *Herrania*.

Herrania kanukuensis R. E. Schultes spec. nov.

TYPE: *A. C. Smith 3541,* Mar. 31-Apr. 16, 1938: Kanuku Mountains, British Guiana.

General distribution: Kanuku Mountains, British Guiana (known only from the type collection).

Meaning of specific name: The specific epithet *"kanukuensis"* refers to the locality where the type was found.

Arbuscula parva, tenuis gracilisque, usque ad 4 m. alta, trunco fulvo-nigro cum cortice aliquid striato. Ramuli densissime fulvo-tomentosi. Folia ampla, digitata, longissime petiolata, quinque-vel sex-foliolata, stipulata. Stipulae caducae lineares, acutae, aliquid rigidae et siccae, densissime fulvo-tomentosae, 15 mm. longae, basi plus minusve 1.5 mm. latae. Petioli robusti, usque ad plus minusve 53 cm. longi, 6-7 mm. in diametro, densissime atque molliter fulvo-tomentosi, basi aliquid dilatati et denique constricti. Foliola sessilia, inaequalia, valde obovata, apice abrupte acuminata, basi abrupte cuneata, margine subintegra, saepe prope apicem subundulato-sinuata atque saepe cum venorum prolongatorum mucronulatis usque ad 1 mm. longis conspicuissime armata; laminis firme papyraceis, centralibus 30-44 cm. longis, 13-16 cm. latis, supra atroviridibus vel maxime sparsissime hirsutis, in venis praecipue aspero-strigosis longis cum pilis albis, in venis praecipue densissime atque molliter ferrugineo-stellato-pilosis, nervis utrinque sed subtus magis prominenter elevatis. Inflorescentiae fasciculatae. Flores non visi (in fructu reliquiis calycis persistentibus cum sepalis tria densissime fulvo-stellato-tomentosis, elliptico-lanceolatis,

apice acutis, 14 mm. longis, 6 mm. latis; et cum petalis quinque, concavis, valde cucullatis, elongato-obovatis, circa 8 mm. longis, 4-5 mm. latis, superne in ligulam - quae imperfectam est - prolongatis. Fructus longe pedunculatus (pedunculus robustior, dense stellato-pilosiusculus, usque ad 3 cm. longus, circa 2-3 mm. in diametro), ovoideus, 7-8 cm. longus, circa 4 cm. in diametro, apice brevissime cuspidatus vel subrotundatus, basi rotundatus, omnino maxime densissime et minute velutino-stellato-pilosiusculus, sine pilis urticantibus, decemcostatus, quinque cum costis primariis angustis humilibusque (1 mm. latis et usque ad sed raro 2 mm. altis), hebetis, atque quinque cum costis secundariis similibus, minoribus et haud prominentibus, pericarpio tenuissimo atque ut videtur aliquid fragile, maturitate ochro. Semina probabiliter quam sexaginta plures, circuitu triangularia vel angulato-ovata, complanata, 12 x 10 x 10 mm., 4 mm. crassa, in pulpa alba inclusa.

Specimens examined:

BRITISH GUIANA:

A. C. Smith, 3541, March 31-April 16, 1938. "North-western slopes of Kanuku Mountains, in drainage of Moku-moku Creek (Takutu tributary) alt. 150-400 m., dense forest. Slender tree, 4 m. high; fruit on trunk". (TYPE in Herb. Arn. Arb.; DUPLICATE TYPES in Herb. N. Y. Bot. Gard.; U. S. Nat. Herb. 1777366).

The collection *Smith 3541* represents a species which is distinct from all its allies in the form of its fruit. Apparently, it is most closely allied to *Herrania Mariae* and related species such as *H. nycterodendron* and *H. Cuatrecasana.* It is much more softly tomentose with brownish stellate hairs than typical *Herrania Mariae.*

Although the collection is without complete floral parts, *Herrania kanukuensis* is sufficiently different in the form of its fruit to warrant specific distinction. The fruit of *Herrania kanukuensis* differs strikingly from all other species, approaching in form only that of the completely unrelated *H. balaensis* of Ecuador. It is relatively small (measuring 9 x 5 cm.) with a rounded or very shortly tipped apex (not elongate ovoid or ellipsoid with an acuminate tip as in most species). The rind is very thin and brittle when dry (in contrast to the usual thick, fleshly and fibrous condition), and the costae are not prominent. In most species, the costae or ribs protrude at least 7-9 mm. either as sharp, thin, cultriform or razor-shaped ridges or as thick, rounded ridges, separated by very deep and wide furrows.

In *Smith 3541,* the five primary ridges are slight, rounded ribs which protrude only 2 mm. at the most, while the five secondary ribs look like very prominent veins. The fruit is yellow when ripe, and it is covered in all parts with a velvet of exceedingly minute and very dense, appressed tomentum of stellate hairs. In this respect, but only in this respect, it approaches the fruit of *Schultes 4011 (Herrania nycterodendron)*. While the fruits of most species of *Herrania* are beset with minute, stinging, bristly hairs which are more or less concentrated along the ribs, the fruits of *Herrania kanukuensis* are completely lacking in these hairs.

The few fragmentary floral parts which remained adhering to the fruit of *Smith 3541* indicate that there are also floral differences between *Herrania kanukuensis* and its closest allies.

Herrania lemniscata (Schomburgk) R. E. Schultes comb. nov.

Lightia lemniscata Schomburgk in Rept. Brit. Assoc. Advancem. Sci. 13 (1844) 71, *nomen subnudum.*

Theobroma Mariae (Goudot) Schumann var. *lobata* Pulle in Rec. Trav. Bot. Neérl. 9 (1912) 151.

TYPE: Not seen. Collected in Guiana by Schomburgk.

General distribution: British and Dutch Guiana and the Orinoco drainage of eastern Venezuela.

Common name: *Wild coco* (British Guiana).

Meaning of the specific name: The specific epithet *"lemniscata"* refers to the ribbon-like ligules which hang from the petals.

Original description:

"The *Lightia* belongs to this family *(Büttneriaceae)*. The great peculiarity of the plant is, that the petals have an elongated appendage, which hangs down from the cluster of flowers like ribbons, and hence its specific name. This tree attains a height of twenty or twenty-four feet, and produces its flowers directly from the stem below the axis of fallen leaves. Only three specimens of this tree were discovered in Guiana by Mr. Schomburgk".

Arbuscula parva, tenuis gracilisque cum trunco simplice, terete, usque ad 8 m. alta, ad apicem trunci ramosa, ramis ut videtur tomentosis denique subglabratis. Foliola amplissima, digitata, longissime petiolata, stipulata, septem-foliolata. Stipulae caducae, minute subulatae, maxime densissime atque molliter ferrugineo-tomentosae, circa 2 cm. longae, basi 2 mm. latae. Petioli robusti, teretes, sulcati, apice late complanato-flabelliformes, densissime atque molliter ferrugineo-

tomentosi, laeviter dilatati atque denique valde constricti, usque ad 45 cm. longi, 8-10 mm. in diametro. Foliola sessilia, inaequalia, mediana usque ad 80 cm. longa, 40 cm. lata, apice acute acuminata, basi longe sensim attenuato-decurrentia, marginibus profundissime pinnatilobata, laciniis usualiter quattuor, irregularibus, plerumque late triangularibus vel late lanceolato-acuminatis, iis in laminarum praecipuarum partem longissimis usque ad 18 cm. longis, 9-10 cm. latis; laminae foliorum papyraceae vel membranaceae, supra atrovirides, subglabrae vel remotissimis cum pilis stellatis, nervis dense ferrugineo-strigillosis, subtus virides pallidae, dense atque molliter stellato-pilosae, nervis dense ferrugineo-tomentosis, utrinque prominentibus cum nervis. Inflorescentiae fasciculatae, usque ad probabiliter triginta vel quadraginta (sed usualiter plus minusve viginti) - florae. Flores caulinares ex trunco inferiore orti in racemis contractis prorumpentes, colore atropurpurei, pedicellati. Pedicelli robusti, teretes, minute atque dense stellato-tomentulosi, articulati, 7-18 mm. longi, basi brevi cum bractea lineari tomentosa, 1 mm. longa subtenti. Floris alabastrus globosus, 9-10 mm. in diametro, densissime atque minute stellato-tomentulosus et stellato-pilosus. Calyx fere usque ad basim divisus, subcymbiformis. Sepala tria, reflexa, subaequalis, crassa, intus densissime pilosiuscula, extus densissime stellato-tomentosa atque stellato-pilosa (duobus cum pilorum generibus distinctis), margine integra atque valde inflexa, fulvo-rubentia; majora dua ovata, apice subobtusa, 12-13 mm. longa, 7 mm. lata, minor unum lanceolato-ellipticum, apice subobtusum, 13-15 mm. longum, 5-6 mm. latum. Petala quinque, basi sessilia, elongato-obovata, concava, apice valde cucullata, margine integra, atrosanguinea, quinque cum nervis prominentibus purpureis vel nigris, 6-7 mm. longa, 4 mm. lata, glabra, utrinque sed extus dense muricato-papillosa, crassa, superne in ligulam prolongata. Petalorum ligulae pendulae, membranaceae, filiformes, glabrae, enervatae, basi 1-1.5 mm. latae, plus minusve 85 mm. longae, colore sanguineae. Tubus stamineus quinque-divisus, staminibus alternatim di - et quattuor - antheriferis, simplicibus, cum filamentis brevibus liberisque. Staminodia conspicua, petaloidea, atrosanguinea, elliptica, margine leviter atque obscure undulata, apice acuminata, 10-12 mm. longa, 4-5 mm. lata, glabra, utrinque dense muricato-granulosa. Ovarium sessile, ovoideo-globosum, 4.5-5 mm. longum, 2.5 mm. in diametro, distincte decem-costatum, quinque cum costis primariis et quinque secundariis, ochrum, densissime hispido-pilosum. Stylus teres, glaber, simplex, stigmate obscure quinque-fido. Fructus ignotus.

Specimens examined:

BRITISH GUIANA:

W. A. Archer 2514, September 7-12, 1934. "Northwest District, Barima River, Red Hill. Slender shrub, 10 ft. Fruit borne at base of stalk. Leaf 7-palmate. *Wild coco.* Fruit sweet and edible, also used to make beverage like chocolate". (TOPOTYPE in U. S. Nat. Herb. 1663202).

J. S. de la Cruz 3892 May. 10-23, 1923. "Northwest District, Wanama River, lat. 7° 45' long. 60° 15' W." (Herb. N. Y. Bot. Gard.; Herb. Gray; Herb. Field Mus. 544530).

VENEZUELA:

H. H. Rusby et R. W. Squires 252, 1896. Near mouth of Río Orinoco. (Herb. N. Y. Bot. Gard.).

Ll. Williams 11339, January 3, 1939. "(Bolívar), Matayaka, (Maquiritare), Abare (Mucuchíes). Arbol delgado, 6-8 m. de alto, con tronco sencillo, torcido; corteza marrón oscuro; fr. amarillento cuando maduro y contiene pulpa comible; en la selva anegada en la estación lluviosa, en el Salto de Para, Medio Caura, Edo. Bolívar, alt. 120 m." (Herb. Field Mus. 987196; U. S. Nat. Herb. 1778849.).

The name *Lightia lemniscata* was published by Schomburgk in 1844 without an adequate description and without the citation of specimens. It must be considered a *nomen subnudum.* Several years later, Schomburgk (in Linnaea 20 (1847) 756) reduced the name to synonymy under Goudot's *Herrania Mariae,* and, wishing to perpetuate a generic name honoring Gov. Light of British Guiana, he transferred the name *Lightia* to a new genus in another family.

In 1848, he (Schomburgk "Fauna und Flora von British-Guiana" (1848) 993) listed under *Herrania Mariae* specimen (s) which he had collected in British Guiana along the river Barima and its affluents. It is probable, then, that this represents the area from which the type material of *Lightia lemniscata* came.

Fortunately, I have had an opportunity to study a collection *(W. A. Archer 2514)* from this same region. I am considering it as a topotype, although it must be remembered that Schomburgk's mention of the "River Barima and its affluents" circumscribes a rather extensive area.

All of the material of *Herrania* from British Guiana and northeastern Venezuela which I have seen is (with the single exception of collections from near the Brazilian border) referable to one species. This species is distinct from others of Middle and South America. I am inclined to believe that these specimens are referable to the concept which Schomburgk called *Lightia lemniscata.*

In the New York Botanical Garden there is a specimen collected in the easternmost part of Venezuela near the mouth of the Río Orinoco in 1896 *(H. H. Rusby et R. W. Squires 252)*. On the label of this specimen there is the following annotation in the handwriting of N. E. Brown: *"= coll. by Schomburgk in Brit. Gui."* Since N. E. Brown was sent to England by Dr. Britton to match material with the older classical collections, I presume that he compared this specimen with Schomburgk's material.

On the basis of this annotation and the homogeneity of the Guianan collections, I am validating Schomburgk's *nomen subnudum* and transferring it to the genus *Herrania.*

Herrania lemniscata is one of the most strikingly distinct species of the genus. It can be distinguished at once by its very large and broad leaves with pinnati-lobed leaflets. It is apparently most closely related to *Herrania laciniifolia* of central Colombia, but its leaflets are much more coarsely incised with fewer and wider lobes. Florally, *Herrania lemniscata* does not seem to be distantly allied to *H. Mariae.* It would appear that the Guianan *Herrania lemniscata* occupies a somewhat intermediate position between the Colombian *H. laciniifolia* and the Brazilian *H. Mariae.* It will be of the greatest interest to learn the form of the fruit of *Herrania lemniscata.* At the present time, nothing is known of the fruit, but I venture to predict that it will be similar in general structure and appearance to the fruit of *Herrania laciniifolia.*

Herrania nitida (Poeppig) R. E. Schultes comb. nov.

Abroma nitida Poeppig Nov. Gen. ac Sp. Pl. 3 (1845) 73.

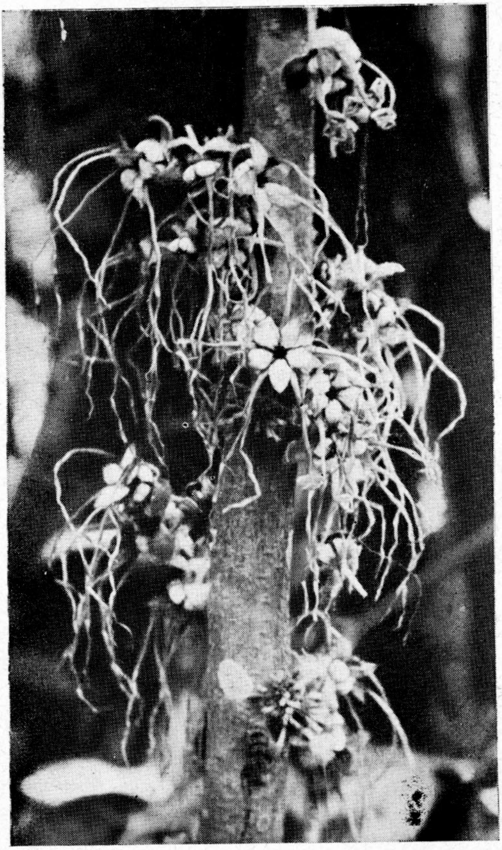
Theobroma nitida (Poeppig) Schumann ex Martius Fl. Brasil. 12, pt. 3 (1886) 72. Non *Theobroma nitida* Bernoulli in Neue Denkschr. allg. Schweiz. Gesell. gesam. Naturw. 24, Nº 3 (1871) 15, t. 7, fig. 3.

TYPE: Not seen; photograph seen. *Poeppig 1979,* July 1830: Perú, Departamento de San Martín, Río Tocache.

General distribution: Northeastern Perú and southern Colombia.

Common names: *Cacahuillo; cacao de monte; cacao silvestre.* Kofán Indian name: *Ko-kee-ot'-chu.*

Meaning of the specific name: The specific epithet *"nitida"* refers to the usually smooth character of the leaf surfaces in contrast to the usual condition of pilosity which is customary in this genus.



Herrania nitida (Poeppig) R. E. Schultes. Flowers. Photograph of *Schultes 3405,* Puerto Ospina, Putumayo, Colombia.

Photo: Schultes.

Original description:

"Arbor biorgyalis, caudice stricto debili, ramis vix ullis. Petioli alterni, pedales vel sesquipedales, profunde striati, uti nervi pube brevi, adpressa, tecti. Foliola sena, interdum quina, valde inaequalia, intermedium reliquiis utplurimum multo majus, pedale vel quindecim pollicum longitudinem attingens, superne dimidium pedem latum, lateralia sensim minora, omnia basi cuneata, glaberrima, laete viridia, nitida, chartaceo-rigida. Flores utplurimum axillares, potius extraaxillari-laterales semper solitarii. Pedunculus circiter duas lineas longus uti calyx pilis fuscis, rigidulis hirtus. Petala glabra, cucullata,

lamina roseo alba, unguem versus sanguinea, ligula terminale simplice, lineari cucullum saltem sexies longitudine excedente. Tubus stamineus quinque-decemfidus; stamina fertilia decem, per paria sub cucullo petali recondita, inaequalia, altero breviore monanthero, altero longiore tres antheras ferente; filamenta lata; antherae aequales, biloculares, longitudinaliter dehiscentes; stamina sterilia quinque cum petalis alterna, eorundem cucullum multum superantia, oblonga, acuta, atropurpurea. Ovarium quinquangulare, quinqueloculare; ovula numerosa, horizontalia, angulo loculorum interno affixa. Styli quinque, cohaerentes; stigmata simplicia. Fructus maturus deest".

Small tree, rather weak, graceful, probably up to 4 meters tall, with dark brown, roughened bark; the trunk usually less than 7 cm. in diameter at the base. The branches sparsely and minutely tomentose, becoming glabrous. Petioles subcomplanate, conspicuously striate-sulcate, ferrugineous, very minutely, closely appressed stellate-tomentulose, basally somewhat swollen, up to 40 cm. long, 5 mm. in diameter. Leaves grouped at the apex of the trunk, digitate, long-petiolate, 7-9 foliolate, stipulate. Stipule linear, up to 2.5 cm. long., 1 mm. wide, usually brown stellate-setulose. Leaflets sessile or almost so, unequal, lanceolate-oblong, apically acuminate, basally very long attenuate-decurrent, marginally entire, rigid chartaceous or subcoriaceous, light green, shiny, glabrous above, glabrous or rarely with very sparse and deciduous minute stellate-hairs remotely placed along the nerves beneath; the central leaflets 25-45 cm. long, 7-14 cm. wide, the lateral leaflets much smaller and often asymmetrical. Inflorescences fasciculate, often very numerous on the basal portion of the trunk, up to 30-40 flowered. Flowers caulinary, pedicellate. Pedicels articulate, densely appressed tomentulose with ocasional strigose setae, 5 mm. long, less than 1 mm. wide. Calyx subcymbiform. Sepals three, yellow-red, externally very coarsely stellate-setose, internally glabrous; outer sepal rounded-ovate, 9 x 10 mm.; inner sepals elliptic, acute, 12 mm. long, 6 mm. wide. Petals five, broadly obovate, rotund, 4-5 mm. wide at the top, 5-6 mm. long, strongly cucullate, fleshy membranous, very densely muricate-papillose on both sides but especially without, glabrous, longitudinally marked with five or six dark red veins, yellowish-red or rose-white, apically prolonged into a ligule. The ligule of the petals linear, pendulous, basally slightly contracted, apically slightly coiled (strongly coiled when immature), pink or scarlet, up to 80 mm. long, membranaceous, glabrous, longitudinally marked with five purple nerves. Stamen tube 5-fid, alternately 2 and 4 antheriferous with simple, flattened free filaments. Staminodes conspicuous, petaloid, glabrous, muricate-granulose, elliptic, apically acute, marginally slightly undulating, dark blood-red without, yellowish-red within, 9 mm. long, 5 mm. wide. Ovary 5 - costate, 5 - locular, subcylindric, densely and very minutely stellate-pilose, yellow, about 1.8 mm. long, 1 mm. in diameter. Style strongly complanate, 3 mm. long, with a simple stigma. Fruit baccate, ovoid, apically acuminate, 11 cm. long, 5 cm. in diameter, dull, rich green, 10-costate (five primary and five secondary ribs), the ribs very thin, cutelliform, minutely and sparsely hispid with stinging hairs along the ribs. Seeds 30-40 or more, flattened, roughly triangular in outline, 9 mm. x 8 mm. x 5 mm. thick, imbedded in a white pulp.

Specimens examined:

COLOMBIA:

R. E. Schultes 3405, March 23-25, 1942. "Comisaría del Putumayo, Río Putumayo, Puerto Ospina, alt. about 280 m. Small tree. Ligules scarlet. Petals cream-yellow with red veins. Staminodes red outside, yellow-red inside. Sepals yellow-red. Kofán Indian name: *Ko-kee-ot'-chu*". (Econ. Herb. Oakes Ames; Herb. Nac. Colomb.; Herb. Gray; Herb. Arnold Arboretum; U. S. Nat. Herb.; Herb. Field Mus.)

R. E. Schultes 3698, May 3, 1942. "Comisaría del Caquetá, Río Orteguaza, Tres Esquinas. In fruit". (Econ. Herb. Oakes Ames; Herb. Nac. Colomb.)

PERU:

Poeppig 1979, July 1830. Departamento de San Martín, Río Tocache. "Peruvia orientalis. In ripa fluminis Tocache". (TYPE in Herb. Vienna - not seen; PHOTOGRAPH OF THE TYPE in Herb. Field Mus. 956678).

(?) *E. P. Killip & A. C. Smith 27431, August* 3-11, 1929. "Departamento Loreto, Iquitos, alt. about 100 m., woods. Slender tree, 10-15 ft. high, about 1 inch diam., fls., arising directly from the trunk, appendage of petals cream white, calyx deep purple". (Herb. N. Y. Bot. Gard.; U. S. Nat. Herb. 1461183). This is questionably referable to *Herrania nitida.*

Llewelyn Williams 2332, August 1929. "Dept. Loreto, Caballo-Cocha on the Amazon River". (U. S. Nat. Herb. 1515399).

Llewelyn Williams 2843, August - September 1929. "Dept. Loreto, La Victoria on the Amazon River" (*) (U. S. Nat. Herb. 1516069).

Herrania nitida is apparently rather a variable species. This can be understood when one realizes that it is probably the most widely distributed species of *Herrania.* The usual lack of pilosity on the leaflets at once serves to distinguish this species from the other species of the Amazonian drainage. *Herrania nitida* can also be immediately distinguished from most other species by the prevailing yellow color of the floral parts.

The nearest ally of *Herrania nitida* seems to be *H. aspera,* but the degree of relationship of the two cannot be definitely established until *H. aspera* is more clearly understood. The collection *Schultes 3698,* referable to *Herrania nitida,* tends to approach, in some of its vegetative characters, the concept of *H. aspera* as represented by the collection *Killip 34247.*

Herrania nitida (Poeppig) R. E. Schultes var. **sphenophylla** R. E. Schultes var. nov.

TYPE: *J. M. Schunke 45,* January 16, 1935: Perú, Departamento Loreto, Guamitonococha, Río Mazán.

General distribution: This variety apparently has the same distribution as *Herrania nitida:* Northeastern Perú and southern Colombia.

Meaning of the varietal name: The varietal epithet *"sphenophylla"* refers to the narrowly lanceolate-elliptic shape of the leaflets by which the variety is chiefly distinguished from the species.

Arbuscula parva a *Herrania nitida* specialiter foliolatis minoribus et lanceolato-ellipticis vel angustissime obovatis, item quoque inflorescentibus paucius-floribus, floribus usualiter aliquid majoribus et rubentioribus atque statura multo minima differt.

Specimens examined:

COLOMBIA:

G. Klug 1853, December 1930. "Comisaría del Putumayo, Umbría, 0° 54' N, 76° 10' W, alt. 325 m; forest. Tree 4 m., fl. reddish, borne on main stem". (Herb. N. Y. Bot. Gard.; Herb. Field Mus. 691000).

(*) May I draw attention to the fact that La Victoria may well be the name of a large farm and sugar-cane plantation situated on the left or northern bank of the Amazon, a few miles above Leticia, in territory formerly disputed between Colombia and Perú, but which now is under the full sovereignty of Colombia.—EDITOR.

PERU:

J. M. Schunke 45, Jan. 16, 1935. "Departamento Loreto, Guamitonococha. Río Mazán, alt. 100-125 m. Common name: *Cacahuino.* Bush 1.5 m. high; fls. scarlet, fruit green edible. Solitary in dense forest". (TYPE in Herb. Arn. Arb.; DUPLICATE TYPES in Herb. N. Y. Bot. Gard., Herb. Field Mus. 997525).

Herrania nycterodendron R. E. Schultes spec. nov.

TYPE: *R. E. Schultes 4011,* 20 Junio 1942: Perú, Departamento Loreto, Remanso, Río Putumayo.

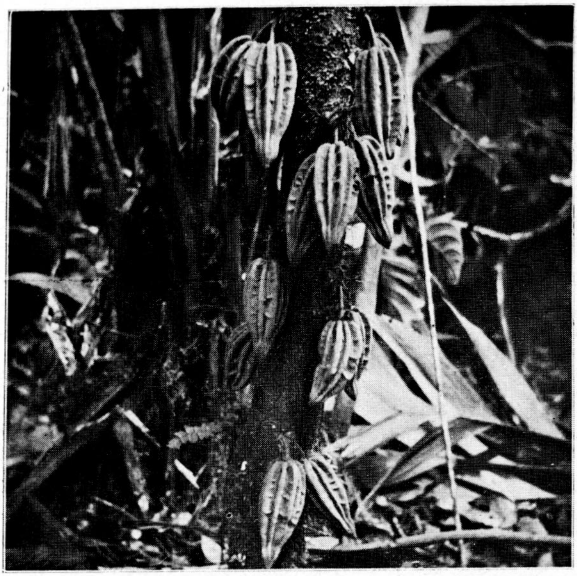
General distribution: Northern Loreto, Perú, and probably the southern part of the Colombian Amazonas.

Common names: *Cacao de monte; cacao de murciélago; cacao silvestre.*

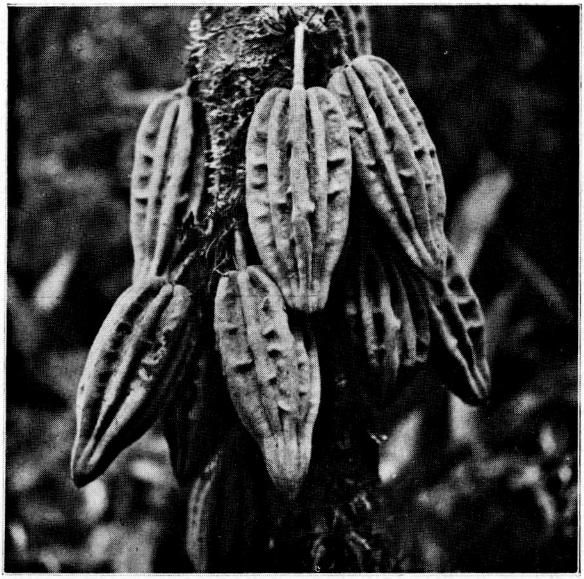
Huitoto Indian names: *Mu-se'-ge-ke; mu-se'-na.*

Meaning of the specific name: The specific epithet *"nycterodendron"* is a rendition into Greek of the common name *palo de murciélago* or "bat-tree".

Arbuscula parva, tenuis gracilisque, usque ad 4.30 m. alta, trunco usualiter simplice, erecto, cylindrico, apice ramoso, ochro-cinereo cum cortice scrobiculato obtecta, basi usque ad 8-9 cm. in diametro. Folia ad trunci apicem congregati, ampla, digitata, longissime petiolata, septem-foliolata, stipulata. Stipulae caducae, lineares, acutae, 2.5-4 cm. longae, plus minusve 3 mm. latae, siccae, tomentosae. Petioli robusti, teretes sed obscurissime sulcati, basi leviter dilatati, subferruginei maxime densissime atque molliter tomentosi, usque ad plus minusve 60 cm. longi, 8-9 mm. in diametro. Foliola sessilia, inaequalia, lanceolato-oblonga, apice in cuspidem plus minusve acutum usque ad 2 cm. producta, basi longe sensim attenuato-decurrentia, margine integra (vel minute et obscure subundulata) atque saepe cum venorum prolongatorum mucronulatis hirsutis usque ad 1 mm. longis conspicuissime armata; laminis firme chartaceis vel papyraceis, centralibus usque ad 60 cm. longis, 22 cm. latis, supra atroviridibus et subnitidis, subglabris vel sparsissime et minute hirsutis, in venis praecipuis minute tomentulosis, subtus virdibus pallidis molliter stellato-pilosis, in venis praecipuis densissime atque molliter ferrugineo-tomentosis; nervis utrinque sed subtus magis prominenter elevatis. Inflorescentiae fasciculatae, usque ad 45-florae. Flores caulinares, longe pedicellati, ex trunco orti inferiore in racemis contractis prorumpentes. Pedicelli gracillimi, adpresso-tomentosi, articulati, 2-2.5 cm. longi, basi brevi cum bractea lineari, acuta, dense tomentosa,



Herrania nycterodendron R. E. Schultes. Fruits. Photograph of *Schultes 4011* (TYPE), Río Putumayo, Remanso, Perú.



Herrania nycterodendron R. E. Schultes. Fruits. Photograph of *Schultes 4011* (TYPE), Río Putumayo, Remanso, Perú.

Photo: R. E. Schultes.

3 mm. longa subtenti. Alabastrus floris subglobosus, magnus, plus minusve 7-8 mm. in diametro, dense et minute stellato-pilosiusculus, fulvus colore. Calyx subcymbiformis, fere usque ad basim divisus. Sepala tria, valde inaequalia, crassa, fulvo-purpurea, aestivatione valvata, extus minute stellato-pilosiuscula, intus minutissime puberula; duo interiora elliptica, margine integra, apice subacuta, circiter 15 mm. longa, 7-8 mm. lata; exteriorum late rotundo-obovatum, apice rotundo-obtusum, margine integrum, 19 mm. longum, 15 mm. latum. Petala quinque, basi sessilia, late rotundata, concava, apice valde cucullata, 10 mm. longa, 8-9 mm. lata, glabra, utrinque sed extus magis muricato-papillosa, pallide ochra purpureis cum nervis septem, superne in ligulam prolongata. Petalorum ligulae filiformes, pendulae, membranaceae, omnino glabrae sed basi minute granulosae, basi 2 mm. latae, usque ad 90-100 mm. longae, colore atropurpureae cum nervis nigris prominentibus. Tubus stamineus quinque-divisus, staminibus alternatim duo - et quattuor-antheriferis, filamentis glabris, gracilis liberisque. Staminodia conspicua, petaloidea, reflexa, lanceolata-elliptica, apice acuta, margine integra, 19-21 mm. longa, 7-9 mm. lata, utrinque muricato-granulosa. Ovarium sessile, ellipsoideum, decemcostatum et quinque-loculatum, dense pilosum, 3 mm. altum, 2 mm. in diametro, ochrum. Stylus filamentosus, glaber, apice profunde quinque-fidus. Stigmata quinque, crassa. Fructus ellipsoideus, 10-12 cm. longus, 4-5 cm. in diametro, apice longe et sensim attenuatus, saepe prope apicem potius constrictus, apice acutus vel saepe rotundo-obtusus, basi indentatus atque pedunculatus (pedunculus lignosus, usque ad 4-5 cm. longus, 3-4 mm. in diametro), omnino maxime densissime et minutissime velutino-stellato-pilosiusculus, sine pilis urticantibus, profundissime decem-costatus, quinque cum costis primariis crassis et valde hebeto-rotundatis, atque quinque cum costis secundariis similibus et minoribus, pericarpio crassulento, sublignoso, maturitate cinereo-ochro. Semina usque ad plus minusve centum, circuitu triangularia vel angulato-ovata, complanata, 9 x 8 x 8 mm., 2 mm. crassa, in pulpa alba inclusa.

Specimens examined:

PERU:

R. E. Schultes 4011, 20 Junio, 1942. "Departamento Loreto, Río Putumayo, Remanso. Alt. 180 m. In forest. Small tree 25 ft. tall. Basal diameter 3-4 inches. Flowers, borne on lower 8 or 9 ft. of the trunk, deep-blood red in all parts. Fascicles with up to 30-40 flowers. Fruit ripening to an ashy yellow color with a hard fibrous rind. Seeds in

a sweet pulp. Pulp edible. Leaves extremely hairy. Common names: *Palo de chimbe; palo de murciélago.* Huitoto Indian name: *Mu-se'-na".* (TYPE in Econ. Herb. Oakes Ames, Sheets 1, 2, 3; DUPLICATE TYPES in Herb. Nac. Colomb. Sheets 1, 2; Herb. Gray, sheets 1, 2; Herb. Arn. Arb.; Herb. Field Mus; U. S. Nat. Herb.).

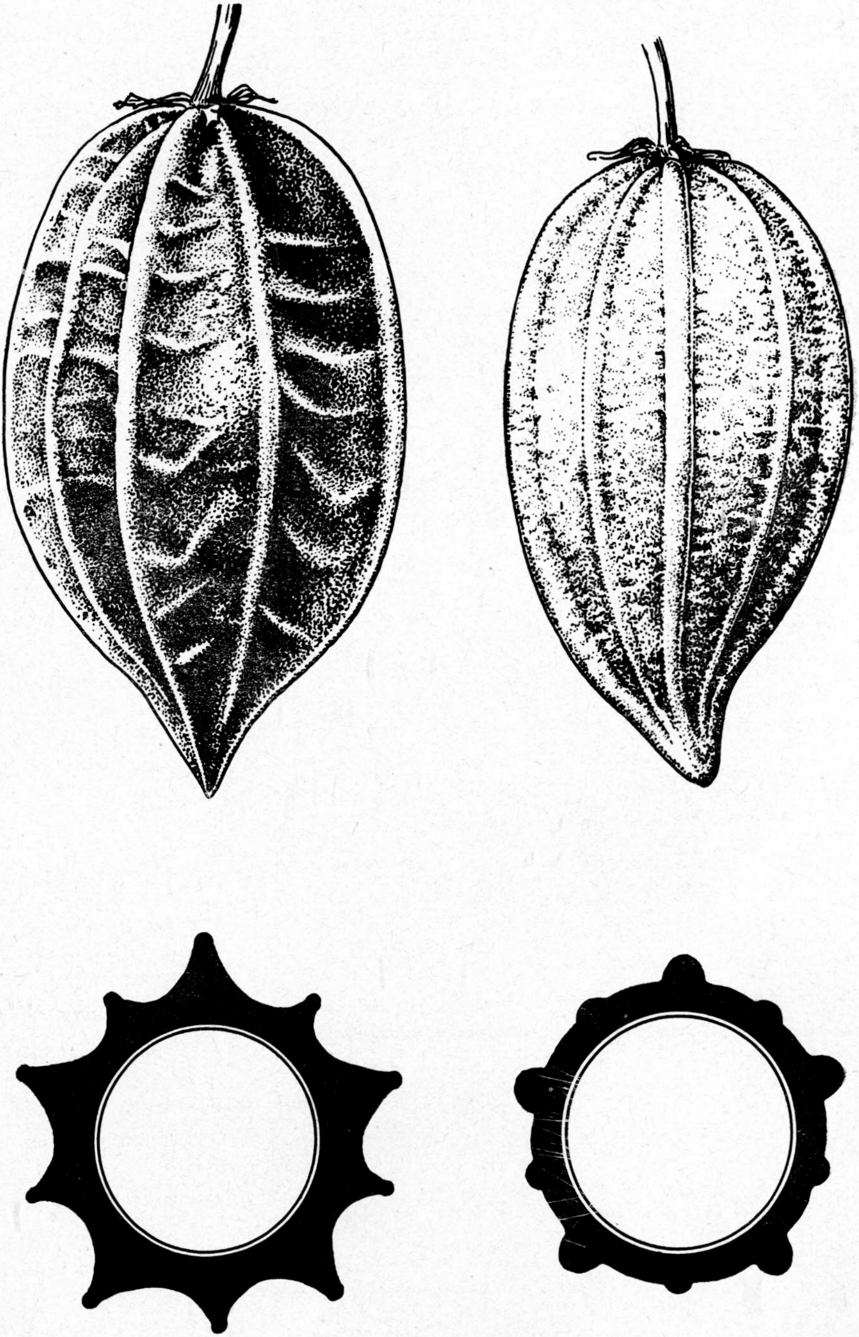
R. E. Schultes 4012, 21 Junio, 1942. "Departamento Loreto, Río Putumayo, Brazilian settlement "Corbata" opposite Isla Salamanca. Alt. 180 m. Tree 15 ft. tall. Petals somewhat striped. Bark mottled brown-gray. Thirty flowers in fascicle. Basal diameter 3 inches. Common names: *Cacao silvestre; cacao de monte; cacao de murciélago.* Huitoto Indian name: *Mu-se'-ge-ke.* (Econ. Herb. Oakes Ames, Sheet 1, 2; Herb. Nac. Colomb. sheets 1, 2; Herb. Gray, sheets 1, 2; Herb. Field Mus.; U. S. Nat. Herb.).

G. Klug 1588, April, 1931. "Departamento Loreto, Mishayacu, near Iquitos, alt. 100 m. Forest. Tree". (Herb. Arn. Arb.; Herb. U. Y. Bot. Gard.; Herb. Field Mus. 873372).

G. Klug 2069, March 1931. "Departamento Loreto, Florida, Río Putumayo at the north of Río Zubineta, altitude about 200 meters. Forest. Tree 4 m.; fl. wine-red, borne on trunk. (Herb. Arn. Arb.; Herb. Gray; U. S. Nat. Herb.).

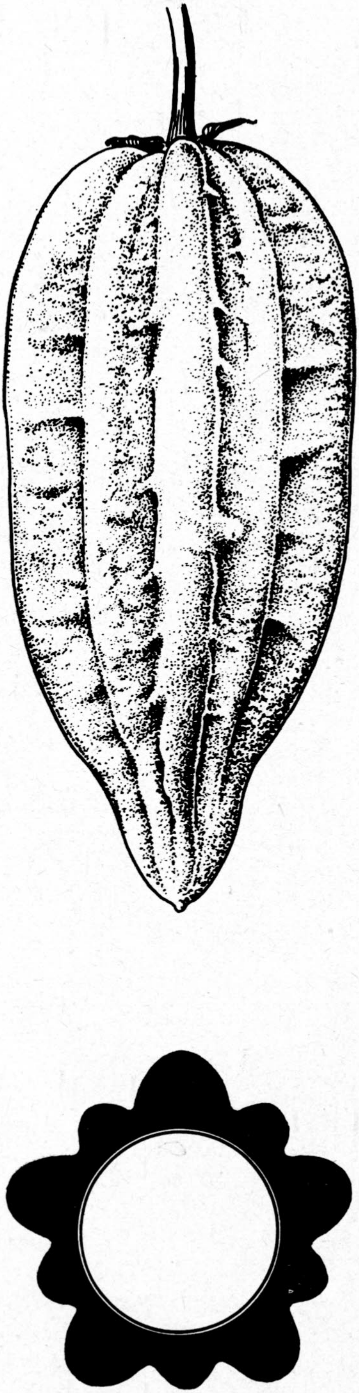
Herrania nycterodendron is most closely related to *H. Mariae* and *H. Cuatrecasana.* It is immediately set apart from these species, however, chiefly by its curious type of fruit. The fruit of *Herrania nycterodendron* has a dry, somewhat coarse and fibrous rind which is covered completely with a soft indument of velvety hairs; it lacks the stinging hairs which are usually present on the fruit in this genus. The ribs of the fruit of *Herrania nycterodendron* are broad and rounded with deep furrows. The fruit is apically much more bluntly rounded in most cases than is that of related species.

The natives of the Peruvian bank of the Río Putumayo near Remanso, Isla Salamanca, refer to *Herrania nycterodendron* as "bat-tree" or "tree of the bats". This curious vulgar name may be due, as several explained to me, to the fact that the soft, velvety indument of the fruit feels like the fur of small bats which are common in the vicinity. It may also be due to the fact that the fruits cluster on the basal portions of the stem in such a manner as to suggest bats which are accustomed to pass the day hanging in clusters from the lower parts of the trunk of small trees in the dark forests (cf. photographs). The Huitoto name, *mu-se'-na,* is also applied to the marraca (*Theobroma glauca* Karsten), and *mu-se'-ge-ke,* the diminutive, is very commonly used to refer to *Herrania nycterodendron* and *H. Mariae.*



Left: Fruit of *Herrania Mariae* (somewhat reduced) side view and cross-section.
Right: Fruit of *Herrania kanukuensis* (somewhat reduced) side view and cross-section.
The hairs of these fruits have been omitted deliberately on the drawings in order to show detail of structure and texture.

Drawn by Gordon W. Dillon



Fruit of *Herrania nycterodendron* (somewhat reduced), side view and cross-section.

Drawn by Gordon W. Dillon.